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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,101	03/16/2001	Pierre Petit	S5115	8975
466	7590	02/02/2004	EXAMINER	
YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			ELVE, MARIA ALEXANDRA	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

### Application No.

09/809,101

### Applicant(s)

PETIT ET AL.

### Examiner

M. Alexandra Elve

### Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18-30 is/are rejected.
- 7) ☒ Claim(s) 17 and 31-33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3/16/01. 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Objections***

Claim 17 is objected to because of the following informalities: "compressor pierced". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Gray (US Pat. 5,283,050).

Gray discloses a reactor, which is capable of mixing, reacting and/or sparging two or more fluids. The reactor is comprised of a porous element, a housing, at least two inlets and an outlet. At least two fluids are diffused directly into and through the porous element and the resulting fluid is withdrawn from the housing through the outlet. The fixed porous element may be made of a sintered material and is shaped to provide chambers and conduits. The porous element has a cylindrical outer surface and is annular, that is, it has an inner channel. The outlet is formed at the end of an

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impermeable pipe or conduit that extends along the channel. (abstract, figures 1-4, col. 2, lines 32-37, 58-63, col. 5, lines 20-23, 55-60)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 & 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lehman et al. (US Pat. 5,908,492) in view of Bosquain et al. (US Pat. 4,541,851).

Lehman et al. discloses a thermally insulated cylindrical adsorber that is used for treating gas, for example purifying air in an air distillation plant. The gas assigned for treatment is passed through a bed of active material; contained in the cylindrical adsorber. This gas filled cavity communicates with a part of the adsorber that includes the gas that is to be treated and/or with a part of the adsorber, which includes the gas that has been treated. Further, the adsorber includes elements for blocking any gas flow through the gas-filled cavity in order to separate the gas that is to be treated from the gas that has been treated.

Absorbent is made from felt and ceramic fibers. The bed of adsorbent is fitted inside the cylindrical shell and rests on a support such that gas is allowed to pass through the adsorbent. The upper end of the cylindrical shell is a gas-filled cavity that is

open in order to allow equilibration of pressure. Felt and ceramic fiber adsorbent was choice in order to withstand the repeated compressions and decompression imposed by the operating cycles.

The adsorption cycle, that is, cleaning of the gas, is conducted at a high pressure, approximately 5 bar absolute. The regeneration step occurs at atmospheric pressure. During the regeneration of the adsorbent, dry and decarbonated nitrogen at a pressure of about 1 bar absolute is injected into the adsorber. (abstract, figures 1-3, col. 3, lines 30-33, col. 4, lines 1-19 & 60, col. 5, lines 5-65)

Lehman et al. teaches a cylindrical shaped adsorber bed, but it is not annular.

Bosquain et al. discloses a container used for air purification in distillation. Two adsorbent beds in the form of sleeves retained by three cylindrical grates are inside the container. Adsorption is conducted with at least one annular bed of active particles. All pipes associated with the container have valves. (abstract, figures 1, 4-5, col. 1, lines 5-15, col. 4, lines 46-50)

It would have been obvious to one of ordinary skill in the art at the time of the invention to use annular beds, as taught by Bosquain et al., in the Lehman et al. system because the annular shape would allow greater area for gas purification and hence would increase the efficiency of the separation process.

Claims 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gray as stated above and further in view of Bosquain et al.

Gray did not teach the use of valves. Bosquain et al. discloses a container used for air purification in distillation. All pipes associated with the container have valves.

It would have been obvious to one ordinary skill in the art at the time of the invention to use valves on the pipes as taught by Bosquain et al. in the Gray apparatus because it is necessary to contain the reaction and chamber contents and hence it must be isolated somewhat from the external environment.

Claims 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gray and Bosquain et al., as stated above, and further in view of Lehman et al.

Gray and Bosquain et al. does not teach an area above the adsorbent bed. Lehman et al. discloses that the upper end of the cylindrical shell is a gas-filled cavity that is open in order to allow equilibration of pressure.

It would have been obvious to one of ordinary skill in the art at the time of the invention to create an open space, as taught by Lehman et al. in the Gray apparatus because this would minimize the level of stress generated during the decompression and compression cycles and would result in a longer life for the adsorbent bed.

#### ***Allowable Subject Matter***

Claims 17 & 31-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See US PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 6:30-3:00 Monday to Friday.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

January 25, 2004.



M. ALEXANDRA ELVE  
PRIMARY EXAMINER